Claims

1. An apparatus for electrostatically applying a powder material to a solid dosage form, the apparatus including

a source of charged powder material,

a support assembly for supporting the solid dosage form with a front face in the vicinity of the source of powder material and facing the source of powder material, the support assembly including an electrically conducting member in the vicinity of the rear face of the solid dosage form and an electrically conducting shield disposed closely around the solid dosage form between the front face and the rear face of the solid dosage form, and

means for creating a potential difference between the source of powder material and the electrically conducting member and for maintaining the electrically conducting shield at a potential more similar to that of the source of powder material than to that of the electrically conducting member.

2. An apparatus according to claim 1, in which the shield extends continuously around all of the solid dosage form.

3. An apparatus according to claim 1 or 2, in which the shield defines a substantially circular opening for accommodating the solid dosage form.

4. An apparatus according to any preceding claim, in which the shield extends outwardly away from the vicinity of the solid dosage form.

5. An apparatus according to any preceding claim, in which the shield has a cylindrical part defining a cylindrical opening for accommodating the solid dosage form.

6. An apparatus according to claim 5, in which the length of the cylindrical part of the shield is less than the depth of the solid dosage form, measured as the maximum separation between the front and rear faces of the solid dosage form.

7. An apparatus according to any preceding claim, in which the part of the shield immediately adjacent to the solid dosage form has a thickness of less than 2 mm.

8. An apparatus according to claim 7, in which the part of the shield immediately adjacent to the solid dosage form has a thickness of less than 1 mm.

9. An apparatus according to any preceding claim, in which the shield is made of sheet metal.

10. An apparatus according to any preceding claim, in which the shield extends outwardly away from the solid dosage form in a direction inclined to a radial direction.

11. An apparatus according to claim 10, in which the angle of inclination is in the range of from 30 to 60 degrees.

12. An apparatus according to any preceding claim, in which when, in use, the solid dosage form is supported on the support assembly, there is a gap of not more than about 1 mm between the solid dosage form and the shield.

13. An apparatus according to any preceding claim, in which the electrically conducting shield comprises an electrically conducting element covered by a layer of insulating material.

14. An apparatus according to any preceding claim, in which the electrically conducting member is adjacent to the rear face of the solid dosage form.

15. An apparatus according to claim 14, in which the electrically conducting member is in contact with the rear face of the solid dosage form.

16. An apparatus according to claim 14 or 15, in which the electrically conducting member includes a shaped receiving part for receiving the rear face of the solid dosage form with the rear face conforming closely to the receiving part over a major part of the area of the rear face.

17. An apparatus according to any preceding claim, in which the potentials at which the electrically conducting shield and the source of powder material are arranged to be maintained are of the same sign.

18. An apparatus according to claim 17, in which the potentials at which the electrically conducting shield and

the source of powder material are arranged to be maintained are substantially the same.

19. An apparatus according to any preceding claim, in which the electrically conducting member is arranged to be maintained at earth potential.

20. An apparatus according to any preceding claim, in which the support assembly is suitable for supporting a plurality of solid dosage forms and includes a plurality of electrically conducting members, each in the vicinity of a rear face of a respective one of the solid dosage forms, and a plurality of electrically conducting shields, each disposed closely around a respective one of the solid dosage forms between the front face and the rear face of the respective solid dosage form.

21. An apparatus according to claim 20, in which the support assembly is mounted for movement relative to the source of charged powder material.

22. An apparatus according to any preceding claim, in which the means for creating a potential difference between the source of powder material and the electrically conducting member comprises a voltage source for applying a bias voltage between the source of powder material and the electrically conducting member.

23. An apparatus according to claim 22, in which the means for creating a potential difference between the source of powder material and the electrically conducting member and

the means for maintaining the electrically conducting shield at a potential more similar to that of the source of powder material than to that of the electrically conducting member are provided by a single voltage source.

24. A method of electrostatically applying a powder material to a solid dosage form, the method including the steps of

providing a source of charged powder material,

supporting a solid dosage form on a support assembly with a front face in the vicinity of the source of powder material and facing the source of powder material, the support assembly including an electrically conducting member in the vicinity of the rear face of the solid dosage form and en electrically conducting shield disposed closely around the solid dosage form between the front face and the rear face of the solid dosage form,

creating a potential difference between the source of powder material and the electrically conducting member and maintaining the shield at a potential more similar to that of the source of powder material than to that of the electrically conducting member, whereby powder material is applied to the solid dosage form forward of the shield but substantially not rearward of the shield.

25. A method according to claim 24, in which the solid dosage form is a domed tablet having a pair of opposite domed end faces joined by a cylindrical side wall.

26. A method according to claim 25, in which the electrically conducting shield is disposed closely around the cylindrical side wall, powder material being applied to the part of the side wall forward of the shield but not to the part of the side wall rearward of the shield.

27. A method according to any of claims 24 to 26, in which the solid dosage form is an oral dosage form.

28. A method according to any of claims 24 to 27, in which the solid dosage form is a pharmaceutical dosage form.

29. A method according to claim 28, in which the pharmaceutical dosage form is a pharmaceutical tablet.

30. A method according to any of claims 24 to 29, in which the potentials at which the electrically conducting shield and the source of powder material are maintained are of the same sign.

31. A method according to claim 30, in which the potentials at which the electrically conducting shield and the source of powder material are maintained are substantially the same.

32. A method according to any of claims 24 to 31, in which the electrically conducting member is maintained at earth potential.

33. A method according to any of claims 24 to 32, in which the potential difference created between the source of powder material and the electrically conducting member includes a bias voltage that is a steady DC voltage.

34. A method according to claim 33, in which an alternating voltage is superimposed on the DC voltage.

35. A method according to claim 34, in which the alternating voltage has a peak to peak value that is more than twice the DC voltage.

36. A method according to any of claims 24 to 35, in which a plurality of solid dosage forms are supported on the support assembly, the support assembly including a plurality of electrically conducting members, each in the vicinity of a rear face of a respective one of the solid dosage forms, and a plurality of electrically conducting shields, each disposed closely around a respective one of the solid dosage forms between the front face and the rear face of the respective solid dosage form, and the support assembly is moved relative to the source of charged powder material to bring in turn the front faces of the solid dosage forms into the vicinity of the source and facing the source.

37. A method according to any of claims 24 to 36, further comprising the step of treating the powder material to fix it on the solid dosage form.

38. A method according to claim 37, in which the treatment of the powder material to fix it on the solid dosage form includes a heating step.

39. A method according to any of claims 24 to 38, comprising the step of applying powder material to a first

surface of the solid dosage form and the subsequent step of applying the material to a second surface of the solid dosage form.

40. A method according to any of claims 24 to 39, in which the powder material includes a biologically active material.

41. An apparatus for electrostatically applying a powder material to a solid dosage form, the apparatus including

a source of charged powder material,

a support assembly for supporting the solid dosage form with a front face in the vicinity of the source of powder material and facing the source of powder material, the support assembly including an electrically conducting member in the vicinity of the rear face of the solid dosage form and an electrically conducting shield disposed closely around the solid dosage form between the front face and the rear face of the solid dosage form, and

a voltage source for creating a potential difference between the source of powder material and the electrically conducting member and for maintaining the electrically conducting shield at a potential more similar to that of the source of powder material than to that of the electrically conducting member.

42. An apparatus for electrostatically applying a powder material to solid dosage forms, the apparatus including

a source of charged powder material,

a support assembly for supporting the solid dosage forms with front faces of the solid dosage forms in the vicinity of the source of powder material and facing the source of powder material, the support assembly including an electrically conducting member in the vicinity of the rear faces of the solid dosage forms and an electrically conducting shield disposed closely around the solid dosage forms between the front faces and the rear faces of the solid dosage forms, the shield including a plurality of openings for receiving respective solid dosage forms, and

means for creating a potential difference between the source of powder material and the electrically conducting member and for maintaining the electrically conducting shield at a potential more similar to that of the source of powder material than to that of the electrically conducting member.